The Impact of Economic Sanctions on Labor Markets: A Micro-level Analysis of Russian Earnings and Job-Switch Behavior

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Abstract

The true impact of economic sanctions on a targeted state has been widely debated, often through the analysis of macroeconomic data in historic case studies. This paper provides new insight into the effect of economic sanctions on earnings, job-switch behavior and employment through the adoption of micro-level data in Russia from 2010-2018 using the Russia Longitudinal Monitoring Survey (RLMS). Furthermore, this paper contributes a new methodology in estimating the severity of sanctions on a targeted state through correlating changes in stock prices to severity weights and generating a points system to track the ramifications of individual sanctions. This paper focuses on two primary points relating to Russian sanctions: 1) the sanctions imposed by the U.S. and E.U. on Russia in response to the Ukraine Crisis and 2) Russia's retaliatory sanctions on agricultural imports as response to Western sanctions. I find that Western sanctions decrease Russian average monthly earnings while Russia's retaliatory sanctions lead to an increase in earnings, domestic ownership and employment in the Russian agricultural sector. These findings display the microeconomic repercussions that are often overlooked in political and macroeconomic investigations into sanctions.

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I. Introduction

The degree to which economic sanctions truly impact a targeted country has been a highly disputed topic amongst researchers due to their increased use as a tool of foreign policy across the world. These studies tend to focus primarily on macroeconomic data, examining broad economic success, or lack thereof, in a targeted country. However, countries have begun opting to impose sanctions on individuals, companies, and industries in order to avoid economic warfare against the civilians of a state. With these highly specified forms of economic sanctions emerging, microeconomic data has materialized as the most precise means through which the impact of economic sanctions may be accurately measured.

The international sanctions resulting from the Ukrainian Crisis serve as a modern, and ongoing case study into the impact of economic sanctions. While previous research has focused on the effect of sanctions through macroeconomic data, this paper provides a unique insight into the consequence of economic warfare through the use of microeconomic, individual-level data. Utilizing changes in GNP to measure the historical effect of sanctions, Davis and Engerman (2003) note that sanctions "composed of various restrictions on international trades, financial flows or the movement of people" tend to yield the highest repercussions. However, with sanctions concentrating on singular firms or industries, macroeconomic means such as GNP lose their validity due to their inability to distinguish the true effect of sanctions from other exogenous factors influencing the broad economy. Using microeconomic data, I am able to pinpoint the effect of sanctions on various sectors within the Russian economy rather than the broader market as a whole. As the sanctions placed on Russia by the U.S. and E.U. were almost exclusively fixated on the sectors of energy, defense, finance, construction and electric utilities, the use of microeconomic data allows for a concentrated inquiry into the repercussions of sanctions on these targeted industries relative to the burden, if any, felt by other industries within the Russian economy. In deconstructing the sanctions with respect to their intended

industries, I am able to bring forth a new analysis regarding one of the most highly disputed questions: do sanctions work?

This study offers not only the first micro-level analysis of U.S. and E.U. sanctions on Russia, but also, to my current knowledge, of economic sanctions as a whole. In offering a microeconomic inquiry into the impact of economic sanctions, the avenues through which the shocks of sanctions migrate an effected economy are able to be observed. Through examining the influence of sanctions over earnings and job-switch behavior by industry, the potential far-reaching negative externalities of economic sanctions on individuals are able to be thoroughly monitored over time.

In this paper, I study the change in earnings and job-switch behavior due to economic sanctions imposed on Russia by the U.S. and E.U. from 2014 – 2018. I use the Russia Longitudinal Monitoring Survey (RLMS) along with new individually developed severity indices to capture the effect of economic sanctions on Russian earnings in the short-run. Enforced as a result of the Ukrainian Crisis beginning in 2013, sanctions on Russia are often studied through a political eye, scrutinizing the effectiveness of sanctions as a tool of foreign policy. As sanctions aim to change the "target nation's policies by inflicting economic damage," it appears reasonable to examine sanctions through this political eye (Nuenkirch and Neumeier 2016). Nevertheless, it remains paramount to consider the possible domino effect created by these sanctions, sending market ripples, shockwaves, throughout the target nation's economy. While GNP or GDP along with other macroeconomic data serve as general economic measures, the effect of sanctions on labor market outcomes in Russia may only be measured through microeconomic evidence. In this sense, to my current knowledge, this paper stands alone, and unique, in its use of individual-level panel data to measure the lasting impression, if any, of sanctions on the Russian labor market.

This paper also provides substantial insight into the effects of sanctions on citizens, rather than governments as a whole. While economic sanctions are often used in foreign policy to pressure

another state towards a desired objective, the question remains as to whether these sanctions undermine the intended government or, rather, simply constrain the welfare of said country's citizens. Therefore, sanctions present severe negative externalities, as they "often appear to have devastating consequences on the overall quality of life of the citizens of the target state" (Nuenkirch and Neumeier 2016). The individual-level data used in this paper allows for an analysis of the effect of each individual sanction on an individual's earnings across multiple sectors. Furthermore, we observe individuals' job-switching behavior between foreign and domestic firms in an industry due to sanctions. The results from these estimations can then be used comparatively both across sectors and sanctions in order to effectively assess the hardships incurred by individuals through multiple time periods. Therefore, this paper provides an examination on whether or not civilians become caught in the crosshairs of economic warfare between two states.

Through the use of micro-level data and newly developed measures of sanction severity, this paper finds a decrease in average monthly earnings in the Russian industries of finance, defense, energy, construction and electric utilities due to economic sanctions. The number of individuals working for a foreign firm within these same industries also registers a slight decrease as a result of sanctions. Concerning Russia's retaliatory sanction against foreign agricultural products, the average monthly earnings of individuals working in agriculture drastically increase. Furthermore, the number of individuals working for a domestic firm within the industry of agriculture sharply rises, mirrored by a steep decline of non-employed individuals in the agricultural sector.

The paper will proceed as follows: section II presents further background on the history of sanctions against Russia, previous literature on sanctions and insight into the creation of data on sanctions along with their severity indices. Section III contributes a theoretical discussion regarding the channels through which sanctions impact the labor market while section IV describes the RLMS data source and outlines how this data was merged with the sanctions' data. The empirical model along

with the methodology used is detailed in section V, followed by the presentation and discourse of the results in section VI. Lastly, section VII administers a conclusion.

II. Institutional Background

2.1 History

The contemporary use of economic sanctions emerged as an essential tool of foreign policy primarily following the collapse of the Soviet Union and the end of the cold war. The primary motive for the use of economic sanctions was a need for alternative measures to quell political strife without war. In this sense, economic sanctions allowed for the intentional constraint of trade or financial relations in order to bring about political goals in a targeted country. Through the imposition of economic sanctions, a country aims to bring about political or economic instability in a targeted country in order to force a desired resolve. Therefore, modern sanctions serve as a decisive tool in foreign policy for their ability to express distaste towards another state without the destructive fallout of war.

Stemming from the Ukrainian Crisis beginning in 2013, sanctions on Russia have endured as an economic shock into present day. The Ukraine Crisis originally erupted on November 21, 2013 with then Ukrainian President Viktor Yanukovych ceasing discussions regarding European integration with the E.U., leading to mass protests in Ukraine as response. Russia emerged as a major player in the Ukraine Crisis on March 1, 2014 with Russia's parliament approving the request of President Vladimir Putin to send Russian forces into Crimea, a peninsula located in southern Ukraine. After Crimeans voted in a referendum on March 16, 2014 to re-join Russia, the Treaty on Accession of the Republic of Crimea to Russia was signed by President Vladimir Putin on March 18, 2014, leading to Russia's annexation of Crimea. In response to Russia's annexation of Crimea, the U.S. and E.U. launched a wave of sanctions via visa restrictions and asset freezes on several Russian and Ukrainian officials on March 17, 2014. Throughout the year, the U.S. and E.U. continued to levy multiple waves

of various sanctions against Russia, leading to a retaliation by Russia on August 6, 2014, banning the import of agricultural and food products from the U.S., E.U. and any other countries that had imposed sanctions on them. These sanctions persists into modern day along with their extensive grasp as the U.S. currently designates 224 individuals and 456 entities on the Office of Foreign Asset Control's Sanctions List (U.S. Department of the Treasury).[1]

2.2 Literature

In measuring the difference in wages stemming from an international economic shock, Hijzen et al. (2013) offer a cross- country analysis of the effects of foreign ownership on wages using firm-level and worker-firm data. This paper seeks to analyze the role of foreign ownership on wages, worker turnover rates, and employment through changes in ownership status that result from cross border acquisitions or worker movements. As a result, the paper is able to offer internationally comparable evidence of foreign ownership's effect on average wages while controlling for worker selection (Hijzen et al. 2013). The primary goal of this paper and my own align in trying to find the difference in turnover rates between firms with domestic and foreign ownership. However, instead of using an acquisition or worker movement as the shock, I use sanctions imposed by the U.S. and E.U. on Russia. In their methodology for firm level data, Hijzen et al. (2013) used two treatment dummy variables to measure the effect of ownership changes on wages: 1) a foreign takeover of a domestic firm and 2) a domestic takeover of foreign firms. Furthermore, regarding worker-level data, a treatment indicator is used to account for worker composition effects (Hijzen et al. 2013). Regarding Russia's retaliation sanction on the U.S. and E.U., I use a similar treatment indicator to identify whether or not an individual works in the agricultural sector. In order to measure their results, Hijzen et al. (2013) use a difference-in-

[1] There are currently 190 persons and 47 entities subject to restrictive measures by the E.U. due to actions undermining the independence of Ukraine (E.U. Council Decision 2014/145 & 2020/128).

differences (DID) estimator to measure the difference in wages induced by a foreign takeover of a domestic firm. In using a DID model, they are able to control for any pre-existing, constant differences in the outcome variable before the change in ownership (Hijzen et al. 2013). Building off their method, I construct a similar DID model in which the difference in earnings for the agricultural sector can be detected through the imposition of sanctions. Furthermore, I expand the model by Hijzen et al. (2013) in adopting a fixed effects model that can measure the difference in earnings across the sectors of finance, energy, defense, construction and electric utilities due economic sanctions.

An ongoing and accessible case of the economic shocks generated from sanctions, the literature on Russian sanctions arising from the Ukraine Crisis is notably sparse. While these sanctions have prompted research from a political background, the economic analysis, especially microeconomic, regarding the significance of these sanctions remains virtually untapped. Dreger et al. (2016) aim to differentiate between the impact of economic sanctions and oil prices on the steep decline of the Russian ruble, which strongly correlates to the economic performance of Russia. The macroeconomic data used in this study is time series data on nominal bilateral exchange rates, Brent oil price, and interest rates for overnight loans in rubles. Since the data on national accounts are limited due to low reporting frequencies, the exchange rate movements emerge as an alternative with daily frequencies that can be applied to a short time period in order to analyze the impact of sanctions and decline in oil prices (Dreger et al. 2016). Instead of exchange rate movements, I employ the use of stock market data due to their daily frequency and public availability in order to monitor the effect of sanctions on earnings and job-switch behavior in Russia. The results found by Dreger et al. (2016), however, indicate that the lofty decline in Ruble's exchange rate can primarily attributed to a drop in oil prices. Therefore, Dreger et al. (2016) establish a favorable, systemic method to detect the disparity in consequences of falling oil prices and economic sanctions on the Russian ruble.

As one of few economic papers evaluating the impact of Western sanctions on the Russian economy, Gurvich and Prilepskiy (2015) interpret the significance of these sanctions through modeling capital flow components, accounting for other factors such as falling oil prices. In tracing the main channels of the financial sanctions' influence on the real sector, three main classification components emerge:

- Increasing uncertainty (beginning even before the sectoral sanctions were introduced) slows down consumption due to rising precautionary savings (often in USD) and dwindling investments due to higher risk premiums;
- Increased cost of debt financing limits access to refinancing, thereby affecting investment opportunities for companies. Moreover, restrictions on technology exports to the Russian Federation constrain the potential growth of total factor productivity; and
- Production in sectors dependent on imported components suffers from the ruble 's sharp fall (Mau and Ulyukaev 2015).

Since most of these financial sanctions were imposed on major publicly owned companies in the finance, energy, defense, construction and electric utilities sectors, I suspect that these influences on the real sector will be largely incorporated into the stock price of these companies (Guryich and Prilepskiy 2015). To this extent, the knowledge relating to a company's financials and production are public information, leading to investors carrying similar fears that are previously mentioned regarding the financial sanctions' influence on the real sector. In focusing exclusively on the financial sector within Russia, Guryich and Prilepskiy (2015) account for the varying degrees and specificity of the sanctions imposed. They attempt to decompose the sanctions into four channels: direct effects, indirect effects, reaction to the sanctions, and second-order effects. Direct effects mean restrictions placed on the foreign borrowings of Russian issuers, indirect effects pertain to the potential for new sanctions or an expansion of existing sanctions, the reaction to sanctions are the personalized nature of the direct and indirect that prevent foreign debt from being refinanced, and second-order effects involve changes in key macroeconomic indicators in response to reduced net capital inflow (Guryich and Prilepskiy 2015). While macroeconomic data is still used as a measure, Guryich and Prilepskiy also

study firm level data from Sberbank, VTB, and Gazprombank. Moreover, they consider the varying ramifications that are inherently implied with each sanction. Similarly, I attempt to account for these implicit effects of each sanction by establishing a lagged severity index while also reviewing the revenue ranking of the firms listed in each sanction with regards to the Russian 500 list. Therefore, Guryich and Prilepskiy provide strong insight into methods for quantifying the impact of Western sanctions on Russia through capital flow models in publicly traded companies within the financial sector.

2.2 Sanctions Data

The data on sanctions was created by compiling all sanctions related to Russia from 2014 – 2018 as provided by the U.S. Department of the Treasury as well as the Publications Office of the European Union. The information regarding the retaliatory sanction by Russia was obtained through the Foreign Agricultural Service, the foreign affairs branch of the United States Department of Agriculture. Through these sources, I was able to construct a chronological timeline of all sanctions imposed by either the E.U., U.S., or Russia. This chronological timeline also incorporates information regarding who imposed the sanction, the industry affected, the number of firms affected, and whether or not the firms were located in Crimea. The name of every firm or entity included in a sanction were incorporated into this dataset, allowing me to research each firm individually in order to establish to which industry the firm appertains as well as their geographical location. The location of the firm was taken into account as some sanctions were placed primarily on Crimean companies, whose information would not be reflected in the data on Russian earnings. Sanctions, asset freezes, or travel bans placed on individuals were not recorded in the sanctions data as it would not be expected that a restriction on a single individual would impact Russian earnings as a whole. Lastly, since most sanctions by the U.S. and E.U. primarily targeted the sectors of finance, energy, finance, construction, and electric utilities, sanctions were categorized by the industry which they targeted. The finance,

energy, and defense sectors serve as the largest portion of the data affected by sanctions, however, firms within the industries of construction and electric utilities were also sanctioned due to their involvement in projects located within Crimea. Although these firms were sanctioned for their work in Crimea, the geographical location of these companies remains in Russia. Therefore, these industries are included within the industries affected by sanctions, although they account for a smaller portion of the data relative to the finance, energy, and defense sectors. Industries other than those previously mentioned were categorized as 'other' for their industry. Since Russia responded with a singular retaliation against the agricultural sector, Russia's only imposed sanction is listed under the industry 'agriculture.'

The largest quarrel regarding the estimations and results within this paper primarily relate to the process through which the severity indices were designed. Since all economic sanctions greatly vary in their breadth, time and origin along with the highly disputed historical effect of sanctions as a whole, there exists no definitive method to measure the severity of each individual economic sanction. As each sanction's severity, determined by my indices, directly influences the measured effect of said sanction on Russian wages, the severity indices stand as the largest aspect of discord within this paper.

In order to eliminate as many biases as possible in establishing the severity of each sanction, there are two separate avenues of approach that may be applied: the stock market and firm size. Four separate severity indices were created in order to measure the weight of each sanction. Weights for three of these indices are appraised through stock market data while the remaining severity index correlates to the size of sanctioned firms. Each of these methods use different data sources to predict the severity of a sanction, leading to a pool of severity indices that produce comparative results for the effect of a sanction on Russian earnings and job switch behavior. Furthermore, these varying measures of severity allow for the impact of sanctions to be evaluated through separate avenues of approach, accounting for the debate regarding how sanctions affect a given state.

Stock Market Weights:

The first index, the MOEX Severity Index, uses the daily returns of six indices within the MOEX Russia Index to evaluate the severity of each sanction. Similarly, the FactSet Severity Index and the Russia Trading System Index (RTSI) calibrate severities in an identical method, however, the components, the selected stocks that make up the index, vary across these separate indices. The three methods used in calculating the weights of the severities for the stock market indices are the Parallel Weight, Base Zero Weight and Equation Weight.[2] Since the stock market reflects the evaluation of companies based off of immediate information, the days prior to a sanction being introduced must be calculated into the evaluation of severity. In anticipating the announcement of new economic sanctions, stock prices may adjust prior to the official disclosure of new restrictions. Therefore, the stock market severities include the two days prior to the declaration of new sanctions in estimating severity. A severity weight with a positive value indicates a sanction with a significant impact while a negative value implies a sanction has had no, or a reversed, impact. In this paper, we are focused on the positive value impacts that sanctions spawn, leading to repercussions in the Russian labor market. The Parallel Weight is a simple measure of severity where, after a new sanction has been introduced, the weight of the severity equals the inverse percentage change in a stock or index. Therefore, if a sanction were to drop the price of an index by 5%, the severity of the sanction would be +5. The Parallel Weight is the primary method used in estimating the impact of sanctions on earnings and job switch-behavior within this paper. A description regarding the calculations of the Base Zero Weight and Equation Weight can be found in the appendix.

[2] Examples of weights produced by each of these measures can be found in the appendix.

Firm Size Weights:

Dreger et al. (2016) develop a sanction index that presents the characterization of western sanctions into three categories: 1) sanctions against persons, 2) sanctions against entities and 3) sanctions against industries.[3] While these categories provide an accurate description of the most common types of sanctions imposed by the West, the disparity within these categories themselves is vast. Therefore, I expand on this index in delineating weights to sanctions based off of the sizes of sanctioned firms. Furthermore, since I am focused on the effect of sanctions on earnings by industry, the category relating to sanctions against individual persons has been removed.

The Firms and Revenue Index constructs weights associated with each sanction based on the size of the sanctioned firms. The weights for the Firms and Revenue Index are based off of a points system related to the size of each listed firm in a given sanction, generating a total severity score for a sanction from the sum of each sanctioned firm's weight.

Table 1: Firms and Revenue Points System[4]

Category Description	Weight
Entire Sector/Industry Sanctioned	15
Sanctioned firm in top 50 revenues in Russia	10
Sanctioned firm in top 100 revenues in Russia	5
Sanctioned firm in top 500 revenues in Russia	2
Other Sanctioned Firms	1

[3] The sanction index developed by Dreger et al. (2016) can be found in the appendix.
[4] The revenue rankings of Russian companies are sourced from the 2015 rankings of РБК 500: Крупнейшие Компании России.

Using the points system depicted above, the following equation can be used to calculate the severity of a sanction with FRI_W standing as the total weight of the sanction as determined by the Firms and Revenue Index:

$$FRI_W = (\#\text{Top 50 Firms})(10)+(\#\text{Top 100 Firms})(5)$$

$$+(\#\text{Top 500 Firms})(2)+ (\#\text{ Other Sanctioned Firms})(1)\ [+15 \text{ if Entire Industry affected}].^{5}$$

The Parallel Weight and Firms and Revenue Index are the two primary methods used in estimating the effect of sanctions on Russian earnings and job-switch behavior within this paper. The Parallel Weight was selected as the primary stock market weight due to its capability to reflect both increases and decreases in stock market data as a result of sanctions being imposed. In this sense, the Parallel Weight is unbiased in registering the effect of sanctions as it accounts for the possibility of both negative and positive effects on the Russian economy. Furthermore, the Parallel Weight determines the severity of sanction in a simple manner, where the severity is directly correlated to the change in stock market price. The Firm and Revenue Index is adopted in order to offer a second, separate method in estimating the severity of a sanction, where weights are determined through a categorical points system.

III. Theoretical Discussion

In estimating the impact of economic sanctions using micro-level data, it is paramount to discern the channels through which the imposed sanctions disturb the previous economic equilibrium. However, there exists no theoretical models outlining the effect of economic sanctions on labor markets. Yet, there are various theoretical models pertaining to tariffs as well as market liberalization and their impact on labor markets. While tariffs are used to protect industries or countries, a state

[5] 15 points are only added to the equation if an entire industry or sector has been sanctioned as recorded by the U.S. or E.U.

imposes sanctions to damage another country's economy. Similarly, market liberalization refers to the relaxation of government policy while sanctions relate to implementing restrictions on a target economy. In this sense, tariffs and market liberalization aim to improve the overall economy and wellbeing of a country, but sanctions are intended to be detrimental towards a targeted country's economy. Therefore, since market liberalization and tariffs are contrary to sanctions, the impact of economic sanctions can be traced through the inverse of these theoretical models.

In estimating the effect of protection, tariffs, on wages in a domestic industry, Gaston and Trefler (1994) define protection as an industry characteristic due to certain industries receiving protection for several years while others have received no, or little protection. Gaston and Trefler (1994) detail three mediums through which trade and protection affects production, imperfectly competitive factor markets and imperfectly competitive product markets. In the first channel, tariffs lead to a reduction in imports, causing an increase in demand, and, therefore, an increase in wages. This structure would then raise wages in the protected industry relative to the economy-wide average wage. The second pathway, where tariffs affect wages via imperfectly competitive factor markets, is explained through an example of unions receiving the benefits of protection in the form of more jobs rather than higher wages. Lastly, the third channel relates to imperfectly competitive product markets, where tariffs affect the interaction between firms, and, therefore, affecting firm performance and wages. In this sense, protection offers domestic firms a competitive advantage as they are able to set a price below the world price plus tariff. Therefore, a higher tariff allows domestic firms to increase domestic price while imports remain unchanged. With a higher domestic price, firms are able to increase efficiency, leading to an increase in wages (Gaston and Trefler 1994).

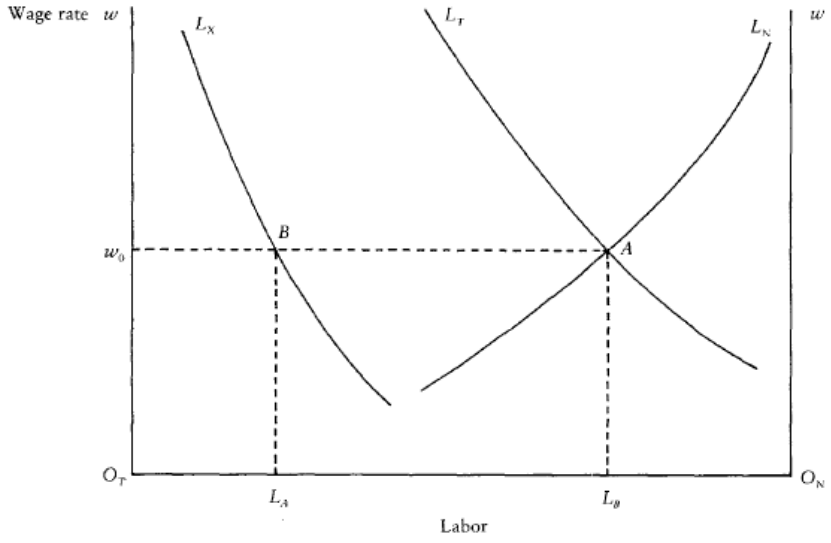
These channels may also serve in illustrating the impact of sanctions due to the by industry characterization of sanctions as outlined by the U.S. and E.U. In the production channel, sanctions, instead of tariffs, would lead to a decrease in exports, generating a decrease in demand, which would

provoke a decrease in earnings. The second avenue of imperfectly competitive factor markets observes the burden of sanctions leading to a reduction in employment in a targeted industry rather than a decrease in earnings. Adjusting the third channel of imperfectly competitive product markets to sanctions, domestic firms would lose access to some global markets, forcing the firms to recoup these lost exports from other countries by charging a lower price than the world price. This decrease in price would create a competitive disadvantage and inefficiency for domestic firms, driving a decrease in earnings.

Instead of focusing solely on tariffs, Edwards (1988) evaluates the effects of a reduction in the world price of the country's importables on labor allocation, unemployment, and wages. In his analysis, Edwards (1988) adopts a three-sector (exportables, importables, and nontradables), four factor (labor, and capital specific to each sector) trade model. These three goods are assumed to be gross substitutes in consumption and production with the income effect not exceeding the substitute effect in this model. To estimate the short-run effects of trade shocks, Edwards (1998) assumes that the capital is sector-specific while labor can move across sectors freely along with the full flexibility of wages.

In the construction of this model, the relative price movement of nontradables and importables in the domestic economy stem from the effect of capital account liberalization. As a result of freeing the capital account, there will be a large, rapid injection of foreign capital into the economy. In turn, this sudden increase of capital inflows produces a large current account deficit. Assuming a fraction of these inflows are spent on nontradable goods, the intake of these capital inflows will require an increase in the relative price of nontradable goods along with the real appreciation of domestic currency (Edwards 1984).

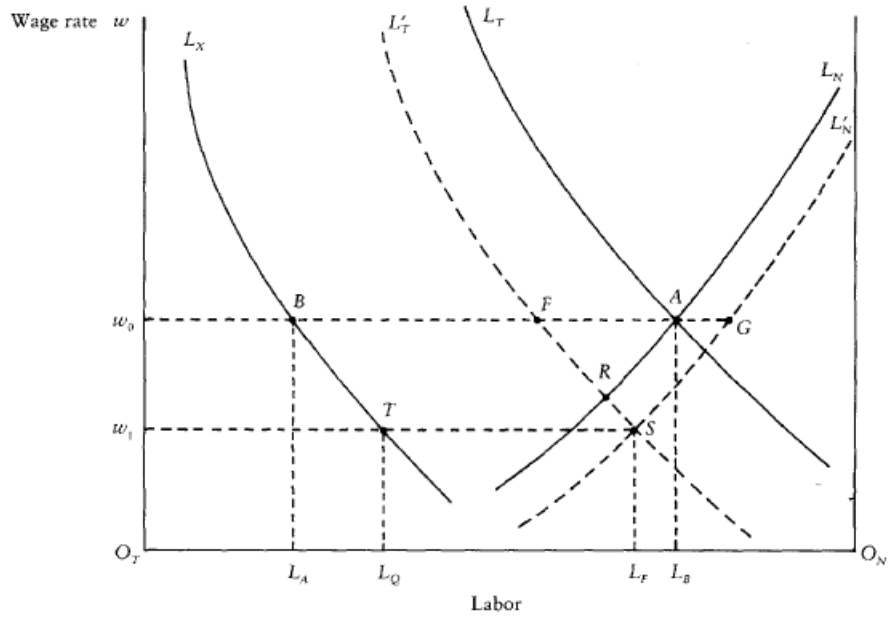
Figure 1: Short-Run Labor Market Equilibrium



(Edwards 1984)

These assumptions are used to create the initial market equilibrium illustrated in figure 1, where the horizontal axis represents the available labor in the economy and the vertical axis displays wage rate in terms of exportables. L_T depicts the demand for labor in the tradable goods sector and is equal to the horizontal sum of the demand for labor in the exportables sector, L_X, and importables sector. L_N exhibits the demand for labor in the nontradables sector. The initial equilibrium in this economy is defined by wage rate w_0 with the amount of labor in production designated by O_TL_A for exportables, L_AL_B for importables and O_NL_B for nontradables (Edwards 1998).

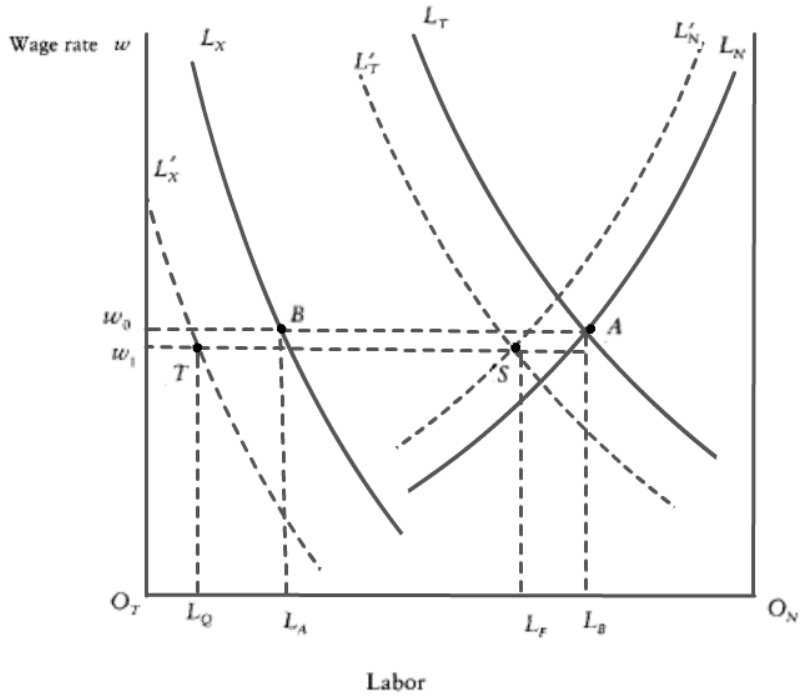
Figure 2: Short-Run Labor Market Adjustment to a Reduction in the World Price of Importables



(Edwards 1988)

The reduction in the price of importables generates changes in the domestic prices of both importables and nontradables, leading to the labor market adjustments in figure 2. The reduction in the world price of importables causes a lower domestic price of importables, decreasing the demand for labor in the tradable goods sector, shown by the downward shift of the L_T curve. This decrease in the world price of importables also produces a decline in the price of nontradables, creating a downward shift of the L_N curve to establish a new short-run equilibrium at *S*. As a result of the reduction in the world price of importables, wages decline in terms of exportables from w_0 to w_1. Wages have also declined for nontradables as the vertical distance between the L_N and L'_N curves is smaller than the decrease in wage from w_0 to w_1. Relative to importables, however, wages have increased due to the domestic price of importables falling more than the drop in wages (Edwards1988).

Figure 3: Short-Run Labor Market Adjustment to Sanctions



Using the theoretical model illustrated by Edwards (1988), this paper gauges the effect from the imposition of sanctions on earnings and job-switch behavior within the targeted country. The introduction of sanctions would lead to a decrease in both exports and imports in a targeted country due to constraints, enforced by another country, of engaging in international trade. Contrary to the liberalization of an economy as outlined by Edwards (1984), sanctions will also affect the capital account of a targeted country due to the sudden decrease of foreign capital inflows into the economy. The new restricted access to foreign capital results in a decrease of the price for nontradables relative to importable goods along with a depreciation of the domestic currency.

The decrease in exports will induce a decrease in demand for labor in the exportables sector, shown through a downward shift in L_X. As imports will also be restricted under sanctions, the reduction in imports can be perceived as an increase in the world price of importables. Therefore, domestic firms producing importable goods will observe an increase in price, leading to a higher demand for labor. While the demand for labor in the exportable sector sharply declines, the

importables sector observes an increase in demand, leading the L_T curve to shift downward by an amount smaller than the decrease in L_X. However, the degree to which the demand for labor in the tradable goods sector decreases is ambiguous, as the difference between the decrease in labor demanded by the exportable sector and increase in the importables sector is unknown. Lastly, due to the increased domestic price of importable goods, L_N will shift upward to L'_N.

As a result of the imposition of sanctions, the exportables sector has experienced a decline in wages from w_0 to w_1. However, the nontradable goods sector observes an increase in wages as the vertical distance between L_N and L'_N is greater than the decrease in wages from w_0 to w_1. There is also an increase in the amount of labor demanded in the nontradables sector from $O_N L_B$ to $O_N L_F$. The wages of the importable goods sector have also increased relative to nontradables as the domestic price of importables has increased by a greater amount than the decrease in wages. The change in the quantity of labor demanded for the exportables and importables sector remains ambiguous due to the unknown degree of the shift in the L_T curve relative to L_X. Therefore, the short-run labor market adjustments due to the imposition of sanctions result in a decrease in wages, causing decreased earnings within the exportables sector while both the importables and nontradables sector observe an increase in wages, and, therefore, earnings with the nontradables sector also recognizing an increase in the quantity of labor demanded.

IV. Data

This paper makes use of micro-level data obtained from the Russia Longitudinal Monitoring Survey (RLMS). Conducted by Higher School of Economics and ZAO "Demoscope" together with the Carolina Population Center, University of North Carolina at Chapel Hill and the Institute of Sociology RAS, the Russia Longitudinal Monitoring Survey (RLMS) serves as panel data collected through a series of nationally representative surveys from 1994 - 2018 within the Russian Federation.

RLMS is designed as a household-based survey intended to evaluate the effects of Russian reforms on the economic welfare of households and individuals. In the sampling of RLMS, there were several taxing hurdles to consider as Russia has a vast territory,[6] the population is ethnically heterogenous, and the residential patterns are complex. Therefore, while RLMS portrays the first nationally representative random sample for Russia, it remains a highly clustered sample.[7]

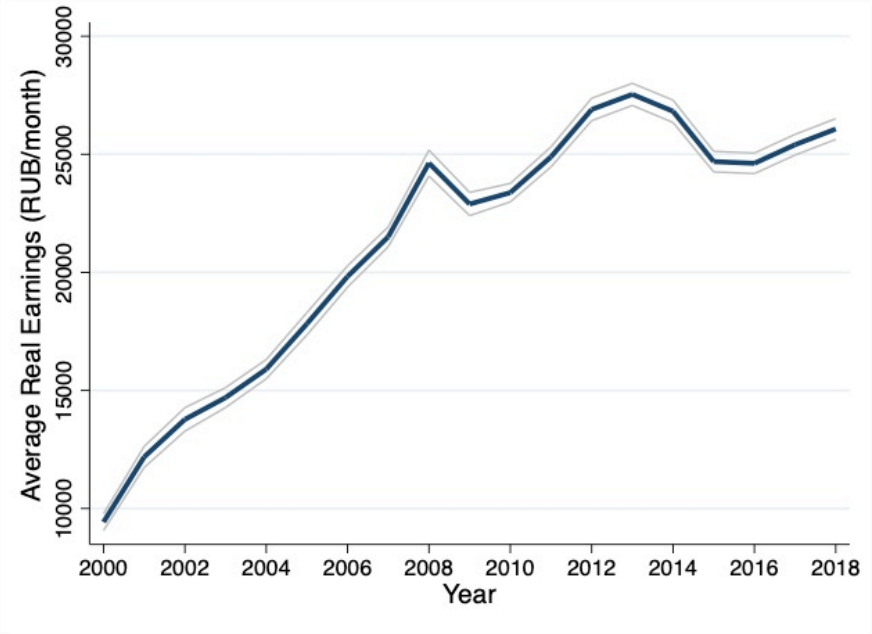
Throughout the former Soviet Union, there was a considerable breakdown in the collection of statistical data. Furthermore, Russian Federation data collection systems did not provide a representative profile of the economic and social dimensions of the population, leading to inadequate monitoring of the poor. The goal of RLMS was to develop a sample of households[8] that would meet scientific standards of true probability while also taking into account the operational constraints of Goskomstat (Russian Federal State Statistics Service). To meet these requirements, RLMS utilized a three-stratified cluster sample of residential addresses, excluding military, penal and other institutionalized populations. Due to the logistical problems with Goskomstat, 20 primary sampling units (PSUs) emerged as the maximum number of units that could be used. In selecting the PSUs, stratification was applied, taking advantage of substantial unpublished data from Goskomstat. These 20 PSUs embraced as much variability as possible, much greater than the amount that would have been captured through a simple random sample of regions.[9]

In organizing RLMS, the first national sample frame of the Russian Federation was established, allowing surveys to be representative at the national level. The primary advantage that RLMS has over the data sources used in other literature assessing the impact of Western sanctions on Russia is the use of microeconomic data that follows the overall wellbeing of households and

[6] Russia spans across 11 time zones and covers more than 1/10 of the land mass of the world.
[7] Russia Longitudinal Monitoring Survey, RLMS-HSE.
[8] This sample excludes institutionalized people (e.g. military and penal populations).
[9] Russia Longitudinal Monitoring Survey, RLMS-HSE.

individuals rather than macroeconomic measures such as GDP. In the time period of 1994-2018, RLMS provides information on earnings and job switch behavior in several time periods before sanctions were introduced to Russia, allowing me to observe the labor market in the Russian Federation through other economic shocks such as the 2008 Financial Crisis in relation to the impact of Western sanctions.

Figure 4: Trend of Earnings with 2016 Consumer Price Index (CPI)



As the RLMS panel data is collected through a series of questionnaires, information regarding the ownership type and industry of an individual's work place is available in addition to their earnings.[10] Furthermore, individuals also report personal characteristics which can be used as explanatory variables in running our estimations. The RLMS questionnaires ask these questions regarding earnings and employment in reference to the previous thirty days, allowing for the most accurate and recent data collection in reference to microeconomic statistics in the labor market.

Since individuals were interviewed for RLMS at various dates throughout a given year and sanctions were imposed on Russia at irregular or sporadic intervals, the merging of the sanctions data

[10] See Appendix Table 11: Means of Log Real Average Earnings per Month in 2016 Prices By Industry Sanctioned.

with RLMS materialized as a general concern. Since the impact of sanctions on Russia would not appear immediately within the day they were imposed, the RLMS interview date could not simply be merged directly to the date of the sanctions, as the effect of the sanction would go undetected. Therefore, the interview date of each individual was merged to the most recent, preceding sanction that had not occurred in the previous thirty days.

This paper utilizes the RLMS data from 2010-2018 in order to detect any trends in the labor market that occurred before sanctions were imposed. Furthermore, the sample was constricted to only working-age adults (18-65). The earnings reported by individuals in this sample relate solely the earnings in the previous thirty days at their primary job. Therefore, earnings from secondary sources are excluded from the estimations within this model. The earnings that an individual reports are adjusted according to the 2016 CPI. Information regarding the industry and firm ownership also relate to the primary job of each individual.

Table 2: Distribution of Individuals by Industry

Industry Affected by Sanctions	Frequency	Percentage	Cumulative Percentage
Defense	1607	2.02%	2.02%
Energy (Oil and Gas)	2352	2.96%	4.97%
Construction	6673	8.38%	13.36%
Agriculture	3368	4.23%	17.59%
Finance	1960	2.46%	20.05%
Electric Utilities	1576	1.98%	22.03%
Other	62053	77.97%	100.00%
Total	79589	100.00%	

An individual is able to report four different ownership types for their place of employment: government, private-domestic, co-owned, and foreign. Co-ownership refers to the partial ownership of both government and private entity. The ownership types of government, private-domestic and co-owned were classified as domestic ownership types in this sample. The industry of each individual's primary job is also utilized in the sample in order to identify the treatment group affected by each sanction. However, since the primary target of sanctions were the energy, finance, defense, construction, electric utilities and agricultural sectors, all other sectors were recoded as 'other industries' that were not affected by sanctions.[11]

V. Empirical Strategy

In measuring the impact of sanctions, this paper looks at two different outcomes: labor earnings and job-switching behavior.

5.1 The Fixed Effects Model in Estimating the Effects of Western Sanctions on Earnings

First, I describe the fixed effects model in estimating the effect of E.U. and U.S. sanctions on earnings. This model employs microeconomic, individual-level data from RLMS along with my sanction indices to estimate the consequence of sanctions on earnings. To remove the effect of the Russia's counter-sanctions related to agriculture, the agricultural industry is not included in this estimation. The model can be illustrated through the following equation:

$$Y_{ijt} = \beta_1 S_{ijt} + \beta_2 X_{it} + \beta_3 I_{jt} + \beta_4 \theta_t + \mu_i + \epsilon_{ijt} \quad (1)$$

where Y_{ijt} is the logarithm of average monthly earnings for individual *i* working in industry *j* in year *t*. S_{ijt} is one of the severity indices for the most recent sanction imposed on industry *j* at least 30 days before the date of interview (*i* subscripts are preserved because the date of the interview varies by

[11] Summary statistics of other key variables are located in the appendix.

individuals). The index is set to zero for other non-agriculture industries where the sanctions were not imposed. I_{jt} is the set of dummy variables for the five industries affected by sanctions (finance, energy, defense, construction, and electric utilities) and other industries. X_{it} is the vector of time-varying individual characteristics such as age, age squared, education level, marital status, number of children, and urban status. θ_t captures year fixed effects, while μ_i represents the individual fixed effects. The error term of the model stands as ϵ_{ijt} under the assumption that it is identically and independently distributed.

Individual fixed effects are included in the model to capture time-constant unobserved individual heterogeneity. Examples of characteristics captured by μ_i include time-constant components of abilities, risk aversion, job location, family background (e.g., parents' schooling and occupation), demographics (e.g., gender and ethnicity), and other important factors influencing the level of individual earnings. Including individual fixed effects also allows us to control for time-constant factors influencing the non-random selection into different industries (e.g., job preferences) and the selection into employment (e.g., commute time and other fixed costs associated with the decision to work). Thus, by using a fixed effects model, we are able to control for these omitted variable biases over time and reduce the bias in estimating the effect of a sanction's severity on earnings (β_1).

The equation (1) will be estimated for six different sanction severity measures of S_{ijt} described in Section II.

5.2 The Difference-in-Differences Model in Estimating the Retaliatory Effect of Sanctions

To estimate the effect of Russia's retaliatory sanctions on earnings, I use a difference-in-differences (DID) estimator. The DID model is more suitable than a severity index approach because the retaliatory sanction was a one-time event on the date of August 6, 2014. In this case, the treatment

group is defined as workers employed in the agricultural sector prior to that date, while the control group is defined as workers in other industries:

Let T_i be a treatment group dummy defined as

$$T_i = \begin{cases} 1, & \text{if individual } i \text{ worked in agriculture in 2013} \\ 0, & \text{if individual } i \text{ worked in other industries in 2013.} \end{cases}$$

The corresponding post-treatment variable, P_t, is defined as

$$P_t = \begin{cases} 1, & \text{if individual } i \text{ was interviewed after August 6, 2014} \\ 0, & \text{if individual } i \text{ was interviewed before August 6, 2014.} \end{cases}$$

Since RLMS surveys are done in the fall months, the post-treatment variable effectively takes the value of 1 for 2014-2018 survey years and the value of zero for 2010-2013 survey years.

In the standard form, the effect of Russia's retaliatory function on earnings can be estimated using the following DID model:

$$Y_{it} = \tilde{\alpha}_0 + \tilde{\alpha}_1 T_i + \tilde{\alpha}_2 P_t + \tilde{\alpha}_3 T_i P_t + \tilde{\alpha}_4 X_{it} + \tilde{\epsilon}_{it}. \quad (2)$$

In the longitudinal data, we can include both individual and year fixed effects to account for time shocks and individual heterogeneity. In this case, T_i and P_t become redundant, and the model becomes

$$Y_{it} = \alpha_1 T_i P_t + \alpha_2 X_{it} + \alpha_3 \theta_t + \eta_i + \varepsilon_{it}. \quad (2')$$

The coefficient of interest is the difference-in-differences estimator α_1, which measures the percent difference in earnings between the treatment and control groups after Russia's retaliation. The model is estimated in its simple version, without performing the balancing test, the overlap assumption test, inverse propensity weights, and other more advanced DID tools.

5.3 Dynamic Logit Model for the Effect of Sanctions on Foreign-Domestic Job-Switching Behavior

Since economic sanctions may impact foreign firms operating within Russia, I estimate the job-switching behavior between foreign and domestic firms using a dynamic logit model. I define Z^*_{ijt}

as the latent propensity of individual *i* to work in a foreign firm in industry *j* and year *t*. The latent propensity is governed by the following process:

$$Z_{ijt}=1(Z^*_{ijt}\geq 0)$$

$$Z^*_{ijt} = \gamma_0 + \gamma_1 Z_{ij,t-1} + \gamma_2 S_{ijt} + \gamma_3 X_{it} + \gamma_4 I_{jt} + \gamma_5 \theta_t + \lambda_i + \varsigma_{ijt}. \quad (3)$$

In this model, the observed variable Z_{ijt} is an indicator taking the value of one if individual *i* is working for a foreign firm in industry *j* at time *t* and zero if agent *i* is working for a domestic firm in industry *j* at time *t*, and ς_{ijt} is the random error term with standard logistic distribution. The lagged dependent variable is included to measure the state dependence effect and to account for job switching between the two types of firms (foreign and domestic). The variables S_{ijt}, I_{jt}, and θ_t remain as previously defined. Including the lagged dependent variables in the models with fixed effects generally leads to a large bias (Nickell, 1981). Instead, the individual heterogeneity is captured through individual random effects, λ_i.

Since the random effect approach permits time-constant variables, the X_{it} vector is extended to include gender and ethnicity variables. The model allows to estimate the marginal effect of sanction severity, S_{ijt}, on the probability of working in foreign firms.

I recognize that the model is estimated in its simplest form and does not account for the initial condition problem and for the potential correlation between independent variables and the random effect. The RE model assumes no correlation of covariates with individual heterogeneity, which is the weakness of this model.

A similar dynamic model can be estimated for the Russia's retaliatory sanctions in the agricultural sector. In this case, the sanction severity index is substituted with the interaction term $T_i P_t$. T_i and P_t are redundant here as T_i is captured by industry fixed effects I_{jt}, while P_t is fully nested within year fixed effects θ_t.

5.4 Dynamic Multinomial Logit Model for Effect of Sanctions on Job-Switch Behavior with Non-Employment

As displayed in the theoretical model, I speculate that sanctions will not only lead to a decrease in earnings, but also a decrease in the demand for labor. The above logit model may be expanded into a dynamic multinomial logit model that includes the outcome of non-employment along with foreign or domestic ownership. Since there is no sanctions data relating to people who were non-employed before sanctions were imposed, the model is restricted to individuals currently employed. The $Z_{ij,t-1}$ variable is unchanged as a dummy indicator for working in the foreign firm vs domestic firm. However, the dependent variable, Z_{ijt}, becomes a categorical variable taking three values for working in domestic firms, foreign firms, and not working. All other variables in the model remain as previously defined.

For measuring the effect of the Russia's retaliatory sanctions on job switching and the probability of losing a job, the sanction severity index is replaced with the interaction term $T_i P_t$.

VI. Results

6.1 U.S. and E.U. Sanctions

Across virtually all estimations, the results represent a decrease in earnings and a decrease in employment under a foreign entity as a result of U.S. and E.U. sanctions imposed on Russia. The consistency of the results across all severity indices serves as validity while also aiming to eliminate the supposed biases in selecting only a single measure of severity. To account for the fluctuations of the stock market and short term discrepancies in the immediate impact of sanctions, the severity indices based on the change in stock market prices were calculated using two separate time periods. One time period measures the change in stock price 10 days following the imposition of a sanction while the other evaluates the change in stock market price 30 days following the imposition of sanction. However, as previously mentioned regarding data, it is important to note that this system actually

begins tracking stock price two days before a sanction is imposed to account for the flow of information through the market.

Table 3: Effect of Sanctions on Earnings and Foreign-Domestic Job-Switch Behavior

	MOEX Severity Index	FactSet Severity Index	RTSI Severity Index
Parallel Weight (10-day)			
Marginal Effect on Log Earnings	-0.00274 (0.00246)	0.000313 (0.00188)	-0.0138*** (0.00323)
Marginal Effect on Foreign Ownership	.0000389 (.0009844)	-.0002054 (.0008735)	-.000925 (.0013543)
Parallel Weight (30-day)			
Marginal Effect on Log Earnings	-0.00315*** (0.00104)	-0.00152** (0.000700)	-0.00417*** (0.000889)
Marginal Effect on Foreign Ownership	-5.21e-06 (.0003938)	-.0001946 (.000352)	-.0001309 (.0004487)

*** p<0.01, ** p<0.05, * p<0.1*

Notes: Standard errors in parenthesis. The parallel weights are designated by the time periods for which they track the change in stock prices following the imposition of new sanctions. The marginal effect below each parallel weight refers to the same time period as designated by the parallel weight directly above it. The marginal effect is measured according to the parallel weight measure of severity.

The RTSI Severity Index yields the greatest change in earnings across all three measurements. In its most severe case, the RTSI severity index computes a decrease of 1.38% in average monthly earnings due to the impact of sanctions imposed on Russia. In extending the measure to the 30-day period following sanctions, all severity indices yield both negative and statistically significant results regarding a decrease in average monthly earnings. The marginal effect on employment with a foreign entity also yields consistent negative results across all three indices, suggesting a decrease in foreign ownership. However, these marginal effects remain small and statistically insignificant. With the steady analysis of a decrease in earnings following the imposition of a new sanction, the conclusion of U.S. and E.U. sanctions having a negative impact on the average monthly earnings in Russia can be comfortably deduced.

The Firms and Revenue Index, a categorical points system I created to measure the severity of sanctions, remained consistent with the previous estimations in predicting a negative impact on earnings and foreign ownership in response to sanctions.

Table 4: Points System Effect of Sanctions on Wages

	Firms and Revenue Index
Severity Weight	-0.00457*** (0.00165)
Marginal Effect of Sanctions on Foreign-Domestic Job-Switch Behavior	-.0000572 (.0001392)

*** p<0.01, ** p<0.05, * p<0.1
Notes: Standard errors in parenthesis. The marginal effect is measured using the same severity weight as determined by the Firms and Revenue Index.

While the data vary in their estimations regarding the extent to which sanctions negatively affected earnings in Russia, the consistent and steady outcomes of negative and statistically significant impacts across four different measures develops a strong conclusion that sanctions by the U.S. and E.U. negatively influenced Russian earnings.

5.2 Russian Retaliatory Sanctions

To fully recognize the scope in the effect of sanctions, the impact of Russia's retaliatory sanctions against foreign agricultural imports were also evaluated. Since the Russian retaliation against Western states was a singular event, a difference-in-differences estimator, rather than a severity index, was applied in estimating the change in earnings. Through this method, the difference between earnings before and after the sanctions were assessed.

Table 5: Effect of Russian Retaliatory Sanctions on Earnings

	Russian Retaliatory Sanction
Difference-in-Differences Estimator	0.0561*** (0.0212)
Marginal Effect of Sanction on Foreign-Domestic Job-Switch Behavior	.0332506 (.0007103)

*** p<0.01, ** p<0.05, * p<0.1
Notes: Standard errors are in parenthesis. The marginal effect on foreign ownership was estimated using the difference-in-differences estimator reported directly above it.

Contradictory to the effect of U.S. and E.U. sanctions on Russia, the retaliation sanctions against foreign agricultural products by Russia resulted in an increase in earnings within the agricultural industry. In banning foreign agriculture, the Russian agricultural industry saw an increase in average monthly earnings by 5.61%. The blocking of foreign agriculture likely led to a decreased supply, and, therefore, higher prices, leading individuals employed within this industry to reap the benefits.

Table 6: Effect of Retaliatory Sanctions on Foreign-Domestic Job-Switch Behavior with Non-Employment

Firm Ownership	Average Marginal Effect
Foreign	.0004581 (.0063574)
Domestic	.0204437 (.0147855)
Non-Employment	-.0209017 (.0137808)

*** p<0.01, ** p<0.05, * p<0.1
Notes: The average marginal effect was calculated using the dynamic multinomial logistical model described in the empirical model section of this paper. The difference-in-differences estimator from the previous table was used in calculating these average marginal effects.

The agricultural market's reaction to these retaliatory sanctions were not only reflected in earnings but also ownership type and employment. The likelihood that an individual worked for a domestic firm saw a drastic increase within the agricultural sector while the foreign ownership remained virtually unchanged. Assuming the prices of agricultural products increased while a stronger demand for domestic agricultural emerged as a result of these retaliatory sanctions, it is likely that the amount of domestic firms within the agricultural sector rapidly expanded. Moreover, the likelihood of having no employment saw a strong decrease in the agricultural sectors as a result of these sanctions. With falling earnings in other industries negatively affected by sanctions, the Russian agricultural sector would emerge as a broadening industry, leading to a rapid inflow of new workers and domestic firms.

VII. Conclusion

Using microeconomic data and newly developed severity sanctions, I find that the U.S. and E.U. sanctions on Russia caused a decrease in average monthly earnings within the industries of finance, energy, construction, and electric utilities. Sanctions also lead to a decrease in foreign ownership, however, these values were statistically insignificant and small in their estimated impact. Contrastingly, Russia's retaliatory sanctions against the West lead to an increase in earnings and domestic ownership with a decrease in non-employment within the agricultural sector in Russia. In many ways, Russia's retaliatory sanction against foreign agricultural products virtually served as a tariff, protecting the domestic agricultural industry. Nonetheless, it is necessary to adjust the manner in which economic sanctions are imposed in order to ensure that only the targeted state's government is undermined rather than constraining the well-being of individual citizens. Since citizens are the main body that make up the economy of a state, imposing sanctions on the economy of a targeted country only serves to hurt the citizens themselves rather than influence the foreign government. Therefore, foreign policy may find more success in pursing more diplomatic measures in persuading a foreign government, as economic sanctions appear to affect citizens rather than the bureaucrats in power.

While this paper is able to clearly identify that sanctions do negatively impact earnings and job-switch behavior, the time for which these effects endure is able to be studied further.

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Appendix

The Base Zero Weight is generated through the same means as the Parallel Weight. However, if a stock or index moves positively in response to a sanction, the severity is listed as zero. In the Parallel Weight, an increase of 3% would generate a severity of -3, however, in the Base Zero Weight, the severity would simply be zero. Lastly, the severity calculated in the Equation Weight can be determined through the following model:

If the stock price has decreased:

$$E_W = [10 + -(\%\Delta)] \times -(\%\Delta)$$

If the stock price has increased:

$$E_W = [10 + -(\%\Delta)] \div (\%\Delta).$$

Table 1: Sample Calculation of Equation Weights

% Change	Severity Weight
-5%	75
-4%	56
-3%	39
-2%	24
-1%	11
0%	0
1%	9
2%	4
3%	2.333
4%	1.5
5%	1

Note: This table provides the output stemming from calculations using the Equation Weight severity index. The % change refers to the change in stock market prices.

Table 2: Sample Calculation of Parallel Weights

% Change	Severity Weight
-5%	5
-4%	4
-3%	3
-2%	2
-1%	1
0%	0
1%	-1
2%	-2
3%	-3
4%	-4
5%	-5

Note: This table provides the output stemming from calculations using the Parallel Weight severity index. The % change refers to the change in stock market prices.

Table 3: Sample Calculation of Base Zero Weights

% Change	Severity Weight
-5%	5
-4%	4
-3%	3
-2%	2
-1%	1
0%	0
1%	0
2%	0
3%	0
4%	0
5%	0

Note: This table provides the output stemming from calculations using the Base Zero Weight severity index. The % change refers to the change in stock market prices.

Table 4: Effect of Sanctions on Earnings for All Severity Weights (10 Days After Sanctions)

Severity Weight	MOEX Index	FactSet Index	RTSI Index
Parallel Weight with Crimean Companies	-0.00425** (0.00199)	-0.00457*** (0.00165)	-0.00885*** (0.00193)
Parallel Weight	-0.00274 (0.00246)	0.000313 (0.00188)	-0.0138*** (0.00323)
Base Zero Weight	-0.00886** (0.00366)	0.000217 (0.00200)	-0.0187*** (0.00429)
Equation Weight	-0.000903 (0.000958)	9.73e-05 (0.000684)	-0.00137 (0.00100)

**** p<0.01, ** p<0.05, * p<0.1*

Notes: Standard errors in parenthesis. The Parallel Weight with Crimean Companies uses the industries of construction and electrical utilities along with finance, energy and defense as the effected industries in Russia. However, the firms sanctioned within these industries were located primarily in Crimea. The weights are calculated in this table using the change in stock market prices 10-days after the imposition of new sanctions.

Table 5: Effect of Sanctions on Earnings for All Severity Weights (30 Days After Sanctions)

Severity Weight	MOEX Index	FactSet Index	RTSI Index
Parallel Weight with Crimean Companies	-0.00354*** (0.00115)	-0.00254*** (0.000697)	-0.00472*** (0.000889)
Parallel Weight	-0.00315*** (0.00104)	-0.00152** (0.000700)	-0.00417*** (0.000889)
Base Zero Weight	-0.00367*** (0.00131)	-0.000981 (0.000908)	-0.00528*** (0.00133)
Equation Weight	-0.00116** (0.000514)	-0.000361 (0.000371)	-0.00140*** (0.000498)

**** p<0.01, ** p<0.05, * p<0.1*

Notes: Standard errors in parenthesis. The Parallel Weight with Crimean Companies uses the industries of construction and electrical utilities along with finance, energy and defense as the effected industries in Russia. However, the firms sanctioned within these industries were located primarily in Crimea. The weights are calculated in this table using the change in stock market prices 30 days after the imposition of new sanctions.

Table 6: Frequency of Domestic Ownership for All Firms

Year	Non-Domestic Ownership	Domestic Ownership	Total
2010	287 (1.99)	14,149 (98.01)	14,436 (100.00)
2011	109 (0.74)	14,679 (99.26)	14,788 (100.00)
2012	319 (2.12)	14,723 (97.88)	15,042 (100.00)
2013	132 (0.92)	14,255 (99.08)	14,387 (100.00)
2014	102 (0.84)	11,978 (99.16)	12,080 (100.00)
2015	93 (0.78)	11,827 (99.22)	11,920 (100.00)
2016	94 (0.78)	11,921 (99.22)	12,015 (100.00)
2017	92 (0.76)	11,961 (99.24)	12,053 (100.00)
2018	253 (2.19)	11,310 (97.81)	11,563 (100.00)
Total	1,481 (1.25)	116,803 (98.75)	118,284 (100.00)

Note: Frequencies are in parenthesis. This table shows the distribution of people who responded to working for a firm with domestic ownership vs non-domestic ownership.

Table 7: Frequency of Foreign Ownership for All Firms

Year	Non-Foreign Ownership	Foreign Ownership	Total
2010	8,436 (96.54)	302 (3.46)	8,738 (100.00)
2011	8,431 (96.55)	301 (3.45)	8,732 (100.00)
2012	8,540 (96.57)	303 (3.43)	8,843 (100.00)
2013	8,130 (96.20)	321 (3.80)	8,451 (100.00)
2014	6,807 (96.20)	269 (3.80)	7,076 (100.00)
2015	6,823 (96.75)	229 (3.25)	7,052 (100.00)
2016	6,859 (96.65)	238 (3.35)	7,097 (100.00)
2017	6,898 (96.58)	244 (3.42)	7,142 (100.00)
2018	6,547 (96.49)	238 (3.51)	6,785 (100.00)
Total	67,471 (96.50)	2,445 (3.50)	69,916 (100.00)

Note: Frequencies are in parenthesis. This table shows the distribution of people who responded to working for a firm with foreign ownership vs non-foreign ownership.

Table 8: Average Marginal Effect of Sanctions on Foreign-Domestic Employment and Non-Employment

Average Marginal Effects	RTSI Severity Index	Firms and Revenue Index
Foreign Employment	.0017217 (.0026888)	.0001185 (.0001534)
Domestic Employment	.0065367 (.006152)	.0000919 (.0003686)
Non-Employment	-.0082584 (.0057372)	-.0002104 (.0003519)

Notes: Standard errors in parenthesis. This table represents the average marginal effect of Western sanctions on foreign-domestic employment and non-employment. These values were calculated using the dynamic multinomial logit model. The RTSI severity index was used as the sole stock market index in calculating average marginal effects as it yielded the strongest results in estimating the effect of sanctions on earnings.

Table 9: Regression Output for Effect of Sanctions on Earnings for the Firms and Revenue Index

Variables	
Age in Years	0.0908*** (0.00402)
Age Squared	-0.000839*** (4.56e-05)
Highest level of education attained = secondary	-0.00411 (0.0103)
Highest level of education attained = upper vocational	0.0535*** (0.0151)
Highest level of education attained = higher education	0.118*** (0.0201)
=1 if married	-0.00488 (0.0100)
Numbers of kids =1	-0.134*** (0.0158)
Numbers of kids =2	-0.212*** (0.0191)
Number of kids =3+	-0.261*** (0.0321)
Urban Status = other city	0.0604 (0.106)
Urban Status = township	0.0467 (0.144)
Urban Status = village	0.119 (0.146)
If Year = 2011	0.0230*** (0.00499)
If Year = 2012	0.0729*** (0.00554)
If Year = 2013	0.121*** (0.00536)

If Year = 2014	0.0847*** (0.00553)
If Year = 2015	-0.00616 (0.00511)
If Year = 2016	-0.0338*** (0.00545)
If Year = 2017	-0.0188*** (0.00528)
If Job Industry = Machine-building	0.00340 (0.0263)
If Job Industry = Military Industry	0.00941 (0.0258)
If Job Industry = Oil/gas	0.0994*** (0.0251)
If Job Industry = Other heavy industry	0.0173 (0.0204)
If Job Industry = Construction	0.0528** (0.0220)
If Job Industry = Transport/ communication	-0.00432 (0.0175)
If Job Industry = Public administration	-0.126*** (0.0264)
If Job Industry = Education	-0.195*** (0.0240)
If Job Industry = Science/ culture	-0.124*** (0.0232)
If Job Industry = Health care	-0.115*** (0.0217)
If Job Industry = Army/ police	0.00374 (0.0212)
If Job Industry = Trade/ domestic services	-0.0187 (0.0145)
If Job Industry = Finance	-0.00830 (0.0296)
If Job Industry = Energy	0.0472 (0.0303)

If Job Industry = Housing	-0.0882*** (0.0218)
If Job Industry = Other services	-0.0656*** (0.0217)
If Job Industry = Other industry	0.0388 (0.0294)
Sanction Severity	-0.00457*** (0.00165)
Constant	7.824*** (0.106)
Observations	59,571
R-squared	0.060

**** p<0.01, ** p<0.05, * p<0.1*

Notes: Standard errors in parenthesis. This table presents the regression output from the estimations of sanction severity using the Firms and Revenue Index. The fixed effects model in estimating the effect of Western sanctions on earnings was used to yield these results.

Table 10: Regression Output in Estimating the Retaliatory Effect of Sanctions

Variables	
P_t	-0.175*** (0.0409)
T_i	-0.0745*** (0.0273)
Difference-in-Differences Estimator	0.0561*** (0.0212)
Age in Years	0.113*** (0.00650)
Age Squared	-0.000849*** (4.36e-05)
Highest level of education attained = secondary	-0.00989 (0.00952)
Highest level of education attained = upper vocational	0.0446*** (0.0143)
Highest level of education attained = higher education	0.111*** (0.0190)
=1 if married	-0.00203 (0.00953)
Numbers of kids =1	-0.127*** (0.0143)
Numbers of kids =2	-0.200*** (0.0176)
Number of kids =3+	-0.241*** (0.0292)
Urban Status = other city	0.0508 (0.0949)
Urban Status = township	-0.0196 (0.132)
Urban Status = village	0.110 (0.127)
If Year = 2011	0.00590 (0.00729)

If Year = 2012	0.0294** (0.0122)
If Year = 2013	0.0532*** (0.0173)
If Year = 2014	0.164*** (0.0196)
If Year = 2015	0.0543*** (0.0142)
If Year = 2016	0.00682 (0.00909)
Constant	7.002*** (0.214)
Observations	66,352
R-squared	0.050

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Notes: Robust standard errors in parenthesis. This table reflects the output from the difference-in-differences model in estimating the retaliatory effect of sanctions.

Table 11: Means of Log Real Average Earnings per Month in 2016 Prices By Industry Sanctioned

YEAR	Defense	Energy	Construction	Agriculture	Finance	Electric Utilities	Other	Total
2010	9.8672479 (.59482403) -163-	10.350077 (.66631873) -259-	10.176131 (.60366877) -664-	9.3189101 (.60852752) -411-	10.243158 (.65658745) -174-	10.013396 (.55773516) -167-	9.7847818 (.64818406) -6263-	9.8275138 (.66922793) -8101-
2011	9.9274023 (.53263806) -160-	10.401295 (.65747801) -197-	10.226817 (.54623228) -649-	9.4356774 (.62735557) -405-	10.212239 (.74428673) -182-	10.067372 (.60681468) -182-	9.8292831 (.64180358) -6119-	9.8723544 (.65852552) -7894-
2012	9.9515821 (.54101935) -171-	10.552135 (.62433053) -232-	10.297598 (.57374317) -603-	9.4920545 (.63442828) -382-	10.241246 (.70757583) -218-	10.141795 (.55107355) -187-	9.9205671 (.66615227) -6505-	9.9599456 (.67763786) -8298-
2013	10.029919 (.54348774) -160-	10.544354 (.61557791) -252-	10.292176 (.57001141) -612-	9.518108 (.55325105) -363-	10.244381 (.75530073) -192-	10.175834 (.56545013) -187-	9.9598048 (.6465339) -6202-	9.9970332 (.65809747) -7968-
2014	10.044868 (.48338352) -161-	10.524708 (.67202332) -221-	10.262327 (.56572928) -528-	9.500918 (.64224509) -251-	10.21016 (.74494135) -175-	10.181331 (.49178559) -144-	9.950902 (.6409309) -5244-	9.9913509 (.65428959) -6724-
2015	10.045345 (.48356728) -153-	10.415323 (.64054806) -219-	10.217256 (.49923437) -509-	9.5365546 (.55564127) -233-	10.08898 (.67589819) -166-	10.119381 (.51720012) -151-	9.875529 (.62022111) -5295-	9.9218283 (.62557105) -6726-
2016	10.047585 (.53611349) -180-	10.506467 (.60789587) -228-	10.198526 (.54127947) -464-	9.5934468 (.52380053) -230-	10.092814 (.94152543) -175-	10.129025 (.50027733) -147-	9.8746949 (.63421465) -5357-	9.9242882 (.64758753) -6781-

2017	10.103931 (.5160147) -163-	10.531396 (.62174334) -230-	10.259738 (.5154939) -457-	9.5922977 (.54720278) -252-	10.157791 (.74812652) -170-	10.132561 (.5145789) -153-	9.9068349 (.64662536) -5350-	9.9562796 (.65194963) -6775-
2018	10.149549 (.46395024) -171-	10.493208 (.63083806) -230-	10.291231 (.5172053) -412-	9.7533702 (.51847271) -243-	10.098257 (.73559758) -167-	10.217225 (.46210216) -133-	9.9435721 (.61648118) -5184-	9.9926368 (.62129005) -6540-
Total	10.019227 (.52846071) -1482-	10.480197 (.64005067) -2068-	10.24547 (.55393452) -4898-	9.5065443 (.59733879) -2770-	10.180034 (.74978785) -1619-	10.128307 (.53738522) -1451-	9.8925195 (.64369707) -51519-	9.9361366 (.6555027) -65807-

Notes: Standard errors are in parenthesis. Number of observations are listed between two dashes (-). This table list the means of log real average earnings per month in 2016 by the industries sanctioned. The finance, defense and energy sectors were the main targets of U.S. and E.U. sanctions. Russia imposed a retaliatory sanction on foreign agricultural products, impacting the Russian agriculture industry. Construction and Electric Utilities are listed as the U.S. and E.U. sanctioned firms within these industries that were primarily located in Crimea. All other industries are listed under 'other.'

Table 12: Effect of U.S. and E.U. Sanctions on Earnings using FactSet Stock Market Indices

VARIABLES	Parallel Weight (10-day)	Parallel Weight (30-day)	Base Zero Weight (10-day)	Base Zero Weight (30-day)	Equation Weight (10-day)	Equation Weight (30-day)
Age in Years	0.0907***	0.0908***	0.0907***	0.0908***	0.0907***	0.0908***
	(0.00402)	(0.00402)	(0.00402)	(0.00402)	(0.00402)	(0.00402)
Age Squared	-0.000838***	-0.000838***	-0.000838***	-0.000838***	-0.000838***	-0.000838***
	(4.56E-05)	(4.56E-05)	(4.56E-05)	(4.56E-05)	(-.56E-05)	(4.56E-05)
Highest level of education attained = secondary	-0.00405	-0.00418	-0.00406	-0.00414	-0.00405	-0.00414
	(0.0103)	(0.0103)	(0.0103)	(0.0103)	(0.0103)	(0.0103)
Highest level of education attained = upper vocational	0.0534***	0.0533***	0.0534***	0.0533***	0.0534***	0.0533***
	(0.0151)	(0.0151)	(0.0151)	(0.0151)	(0.0151)	(0.0151)
Highest level of education attained = higher education	0.118***	0.118***	0.118***	0.118***	0.118***	0.118***
	(0.0201)	(0.0201)	(0.0201)	(0.0201)	(0.0201)	(0.0201)
=1 if married	-0.00478	-0.00491	-0.00478	-0.00486	-0.00478	-0.00486
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Numbers of kids =1	-0.134***	-0.134***	-0.134***	-0.134***	-0.134***	-0.134***
	(0.0158)	(0.0158)	(0.0158)	(0.0158)	(0.0158)	(0.0158)
Numbers of kids =2	-0.213***	-0.212***	-0.213***	-0.212***	-0.213***	-0.212***
	(0.0191)	(0.0191)	(0.0191)	(0.0191)	(0.0191)	(0.0191)
Number of kids =3+	-0.261***	-0.260***	-0.261***	-0.260***	-0.261***	-0.260***
	(0.0321)	(0.0321)	(0.0322)	(0.0322)	(0.0322)	(0.0322)
Urban Status = other city	0.0609	0.06	0.0609	0.0613	0.0609	0.0611
	(0.106)	(0.106)	(0.106)	(0.106)	(0.106)	(0.106)
Urban Status = township	0.0468	0.0461	0.0468	0.0477	0.0467	0.0476
	(0.143)	(0.144)	(0.143)	(0.143)	(0.143)	(0.143)
Urban Status = village	0.119	0.119	0.119	0.12	0.119	0.12
	(0.146)	(0.146)	(0.146)	(0.146)	(0.146)	(0.146)

If Year = 2011	0.0231*** (0.00499)	0.0230*** (0.00499)	0.0231*** (0.00499)	0.0230*** (0.00499)	0.0231*** (0.00499)	0.0230*** (0.00499)
If Year = 2012	0.0731*** (0.00554)	0.0729*** (0.00554)	0.0731*** (0.00554)	0.0729*** (0.00554)	0.0731*** (0.00554)	0.0729*** (0.00554)
If Year = 2013	0.121*** (0.00536)	0.121*** (0.00535)	0.121*** (0.00535)	0.121*** (0.00535)	0.121*** (0.00536)	0.121*** (0.00535)
If Year = 2014	0.0840*** (0.00554)	0.0844*** (0.00553)	0.0840*** (0.00553)	0.0841*** (0.00552)	0.0840*** (0.00555)	0.0843*** (0.00553)
If Year = 2015	-0.00802 (0.00511)	-0.00696 (0.00509)	-0.00798 (0.00509)	-0.00746 (0.00509)	-0.00801 (0.00509)	-0.00744 (0.0051)
If Year = 2016	-0.0336*** (0.00551)	-0.0319*** (0.00557)	-0.0336*** (0.00549)	-0.0326*** (0.00558)	-0.0336*** (0.00549)	-0.0328*** (0.00556)
If Year = 2017	-0.0187*** (0.00528)	-0.0202*** (0.00536)	-0.0187*** (0.00528)	-0.0190*** (0.00529)	-0.0187*** (0.00528)	-0.0190*** (0.00529)
If Job Industry = Machine-building	0.00337 (0.0263)	0.00343 (0.0263)	0.00338 (0.0263)	0.00342 (0.0263)	0.00336 (0.0263)	0.00347 (0.0263)
If Job Industry = Military Industry	0.00527 (0.0258)	0.0104 (0.0258)	0.00548 (0.0258)	0.00939 (0.0258)	0.00496 (0.0262)	0.0105 (0.0259)
If Job Industry = Oil/gas	0.0974*** (0.0251)	0.101*** (0.0251)	0.0974*** (0.0251)	0.101*** (0.0252)	0.0969*** (0.0255)	0.102*** (0.0254)
If Job Industry = Other heavy industry	0.0175 (0.0204)	0.0174 (0.0204)	0.0175 (0.0204)	0.0174 (0.0204)	0.0175 (0.0204)	0.0175 (0.0204)
If Job Industry = Construction	0.0503** (0.022)	0.0513** (0.022)	0.0503** (0.022)	0.0520** (0.0221)	0.0494** (0.0232)	0.0549** (0.0225)
If Job Industry = Transport/ communication	-0.00409 (0.0175)	-0.00417 (0.0175)	-0.00409 (0.0175)	-0.00414 (0.0175)	-0.00409 (0.0175)	-0.00413 (0.0175)
If Job Industry = Public administration	-0.126*** (0.0264)	-0.126*** (0.0264)	-0.126*** (0.0264)	-0.126*** (0.0264)	-0.126*** (0.0264)	-0.126*** (0.0264)

If Job Industry = Education	-0.194*** (0.024)	-0.194*** (0.024)	-0.194*** (0.024)	-0.194*** (0.024)	-0.194*** (0.024)	-0.194*** (0.024)
If Job Industry = Science/ culture	-0.125*** (0.0232)	-0.125*** (0.0232)	-0.125*** (0.0232)	-0.125*** (0.0232)	-0.125*** (0.0232)	-0.124*** (0.0232)
If Job Industry = Health care	-0.115*** (0.0217)	-0.115*** (0.0217)	-0.115*** (0.0217)	-0.115*** (0.0217)	-0.115*** (0.0217)	-0.115*** (0.0217)
If Job Industry = Army/ police	0.00375 (0.0212)	0.00355 (0.0212)	0.00374 (0.0212)	0.00362 (0.0212)	0.00375 (0.0212)	0.00361 (0.0212)
If Job Industry = Trade/ domestic services	-0.0186 (0.0145)	-0.0186 (0.0145)	-0.0186 (0.0145)	-0.0186 (0.0145)	-0.0186 (0.0145)	-0.0186 (0.0145)
If Job Industry = Finance	-0.0203 (0.0296)	-0.0118 (0.0297)	-0.0201 (0.0296)	-0.0146 (0.0296)	-0.0206 (0.0297)	-0.0139 (0.0296)
If Job Industry = Energy	0.0497 (0.0303)	0.0467 (0.0303)	0.0496 (0.0303)	0.0491 (0.0303)	0.0487 (0.031)	0.0524* (0.0305)
If Job Industry = Housing	-0.0881*** (0.0218)	-0.0881*** (0.0218)	-0.0881*** (0.0218)	-0.0881*** (0.0218)	-0.0881*** (0.0218)	-0.0881*** (0.0218)
If Job Industry = Other services	-0.0652*** (0.0217)	-0.0656*** (0.0217)	-0.0653*** (0.0217)	-0.0655*** (0.0217)	-0.0652*** (0.0217)	-0.0655*** (0.0217)
If Job Industry = Other industry	0.0392 (0.0294)	0.039 (0.0294)	0.0392 (0.0294)	0.039 (0.0294)	0.0392 (0.0294)	0.039 (0.0294)
Sanction Severity	0.000313 (0.00188)	-0.00152** (0.0007)	0.000217 (0.002)	-0.000981 (0.000908)	9.73E-05 (0.000684)	-0.000361 (0.000371)
Constant	7.829*** (0.106)	7.825*** (0.106)	7.829*** (0.106)	7.825*** (0.106)	7.830*** (0.106)	7.825*** (0.106)
Observations	59,571	59,571	59,571	59,571	59,571	59,571
R-squared	0.06	0.06	0.06	0.06	0.06	0.06

**** p<0.01, ** p<0.05, * p<0.1*

Notes: Standard errors in parenthesis. This table represents the complete regression output for all severity weights in using the FactSet Severity Index for the fixed effects model to estimate the effect of Western sanctions on earnings. The weights are calculated in this table using the change in stock market prices both 10 days and 30 days after the imposition of new sanctions. The distinction of (10-day) or (30-day) under each weight distinguishes the time period after a sanction is imposed that the severity is measuring.

Table 13: Effect of U.S. and E.U. Sanctions on Earnings using MOEX Stock Market Indices

VARIABLES	Parallel Weight (10-day)	Parallel Weight (30-day)	Base Zero Weight (10-day)	Base Zero Weight (30-day)	Equation Weight (10-day)	Equation Weight (30-day)
Age in Years	0.0907***	0.0908***	0.0909***	0.0909***	0.0908***	0.0910***
	(0.00402)	(0.00402)	(0.00402)	(0.00402)	(0.00403)	(0.00402)
Age Squared	-0.000838***	-0.000838***	-0.000838***	-0.000839***	-0.000838***	-0.000839***
	(4.56E-05)	(4.56E-05)	(4.56E-05)	(4.56E-05)	(4.56E-05)	(4.56E-05)
Highest level of education attained = secondary	-0.00402	-0.00405	-0.00413	-0.00413	-0.00412	-0.00416
	(0.0103)	(0.0103)	(0.0103)	(0.0103)	(0.0103)	(0.0103)
Highest level of education attained = upper vocational	0.0535***	0.0535***	0.0534***	0.0534***	0.0534***	0.0534***
	(0.0151)	(0.0151)	(0.0151)	(0.0151)	(0.0151)	(0.0151)
Highest level of education attained = higher education	0.118***	0.118***	0.118***	0.118***	0.118***	0.118***
	(0.0201)	(0.0201)	(0.0201)	(0.0201)	(0.0201)	(0.0201)
=1 if married	-0.00481	-0.00489	-0.00489	-0.00489	-0.00485	-0.00491
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Numbers of kids =1	-0.134***	-0.134***	-0.134***	-0.134***	-0.134***	-0.134***
	(0.0158)	(0.0158)	(0.0158)	(0.0158)	(0.0158)	(0.0158)
Numbers of kids =2	-0.213***	-0.212***	-0.212***	-0.212***	-0.212***	-0.212***
	(0.0191)	(0.0191)	(0.0191)	(0.0191)	(0.0191)	(0.0191)
Number of kids =3+	-0.261***	-0.261***	-0.260***	-0.260***	-0.260***	-0.260***
	(0.0322)	(0.0322)	(0.0322)	(0.0322)	(0.0322)	(0.0322)
Urban Status = other city	0.0612	0.0582	0.0599	0.0592	0.061	0.0598
	(0.106)	(0.106)	(0.106)	(0.106)	(0.106)	(0.106)
Urban Status = township	0.0464	0.041	0.0458	0.044	0.0475	0.0455
	(0.143)	(0.144)	(0.144)	(0.144)	(0.143)	(0.144)
Urban Status = village	0.119	0.114	0.119	0.117	0.12	0.119
	(0.146)	(0.147)	(0.146)	(0.146)	(0.146)	(0.146)

If Year = 2011	0.0230*** (0.00499)	0.0229*** (0.00499)	0.0229*** (0.00499)	0.0229*** (0.00499)	0.0230*** (0.00499)	0.0229*** (0.00499)
If Year = 2012	0.0731*** (0.00553)	0.0728*** (0.00554)	0.0727*** (0.00554)	0.0727*** (0.00554)	0.0728*** (0.00554)	0.0726*** (0.00554)
If Year = 2013	0.121*** (0.00536)	0.121*** (0.00536)	0.121*** (0.00536)	0.120*** (0.00535)	0.121*** (0.00536)	0.120*** (0.00535)
If Year = 2014	0.0844*** (0.00552)	0.0853*** (0.00554)	0.0848*** (0.00552)	0.0849*** (0.00552)	0.0846*** (0.00555)	0.0852*** (0.00554)
If Year = 2015	-0.00801 (0.00505)	-0.00758 (0.00505)	-0.00777 (0.00505)	-0.0077 (0.00505)	-0.00764 (0.00506)	-0.00739 (0.00506)
If Year = 2016	-0.0339*** (0.00545)	-0.0333*** (0.00546)	-0.0340*** (0.00545)	-0.0335*** (0.00545)	-0.0335*** (0.00545)	-0.0332*** (0.00546)
If Year = 2017	-0.0188*** (0.00528)	-0.0215*** (0.0054)	-0.0196*** (0.00529)	-0.0202*** (0.00531)	-0.0187*** (0.00528)	-0.0198*** (0.0053)
If Job Industry = Machine-building	0.00346 (0.0263)	0.00362 (0.0263)	0.00344 (0.0263)	0.00349 (0.0263)	0.00355 (0.0263)	0.00366 (0.0263)
If Job Industry = Military Industry	0.00592 (0.0257)	0.00683 (0.0257)	0.00789 (0.0258)	0.00839 (0.0258)	0.0115 (0.0262)	0.014 (0.026)
If Job Industry = Oil/gas	0.0942*** (0.0253)	0.0913*** (0.0251)	0.0986*** (0.0251)	0.0975*** (0.0251)	0.102*** (0.0255)	0.103*** (0.0252)
If Job Industry = Other heavy industry	0.0175 (0.0204)	0.0175 (0.0204)	0.0175 (0.0204)	0.0175 (0.0204)	0.0175 (0.0204)	0.0175 (0.0204)
If Job Industry = Construction	0.0521** (0.022)	0.0527** (0.022)	0.0555** (0.0221)	0.0567** (0.0221)	0.0602** (0.0242)	0.0650*** (0.0229)
If Job Industry = Transport/ communication	-0.00419 (0.0175)	-0.00431 (0.0175)	-0.0043 (0.0175)	-0.00431 (0.0175)	-0.00415 (0.0175)	-0.00424 (0.0175)
If Job Industry = Public administration	-0.126*** (0.0264)	-0.126*** (0.0264)	-0.126*** (0.0264)	-0.126*** (0.0264)	-0.126*** (0.0264)	-0.126*** (0.0264)

If Job Industry = Education	-0.194*** (0.024)	-0.194*** (0.024)	-0.195*** (0.024)	-0.195*** (0.024)	-0.195*** (0.024)	-0.195*** (0.024)
If Job Industry = Science/ culture	-0.125*** (0.0232)	-0.125*** (0.0232)	-0.125*** (0.0232)	-0.125*** (0.0232)	-0.124*** (0.0232)	-0.124*** (0.0232)
If Job Industry = Health care	-0.115*** (0.0217)	-0.115*** (0.0217)	-0.115*** (0.0217)	-0.115*** (0.0217)	-0.115*** (0.0217)	-0.115*** (0.0217)
If Job Industry = Army/ police	0.00375 (0.0212)	0.00378 (0.0212)	0.00369 (0.0212)	0.00371 (0.0212)	0.00364 (0.0212)	0.00362 (0.0212)
If Job Industry = Trade/ domestic services	-0.0186 (0.0145)	-0.0186 (0.0145)	-0.0186 (0.0145)	0.0186 (0.0145)	-0.0186 (0.0145)	-0.0186 (0.0145)
If Job Industry = Finance	-0.017 (0.0297)	-0.00682 (0.0296)	-0.00928 (0.0296)	-0.00485 (0.0295)	-0.0126 (0.0296)	-0.00387 (0.0294)
If Job Industry = Energy	0.0489 (0.0303)	0.0451 (0.0303)	0.0495 (0.0303)	0.0494 (0.0303)	0.0580* (0.0318)	0.0597* (0.0307)
If Job Industry = Housing	-0.0881*** (0.0218)	-0.0880*** (0.0218)	-0.0882*** (0.0218)	-0.0882*** (0.0218)	-0.0882*** (0.0218)	-0.0882*** (0.0218)
If Job Industry = Other services	-0.0653*** (0.0217)	-0.0653*** (0.0217)	-0.0656*** (0.0217)	-0.0656*** (0.0217)	-0.0656*** (0.0217)	-0.0658*** (0.0217)
If Job Industry = Other industry	0.0392 (0.0294)	0.0392 (0.0294)	0.039 (0.0294)	0.0389 (0.0294)	0.039 (0.0294)	0.0389 (0.0294)
Sanction Severity	-0.00274 (0.00246)	-0.00315*** (0.00104)	-0.00886** (0.00366)	-0.00367*** (0.00131)	-0.000903 (0.000958)	-0.00116** (0.000514)
Constant	7.829*** (0.106)	7.827*** (0.106)	7.823*** (0.106)	7.823*** (0.106)	7.823*** (0.106)	7.819*** (0.106)
Observations	59,571	59,571	59,571	59,571	59,571	59,571
R-squared	0.06	0.061	0.061	0.061	0.06	0.06

**** p<0.01, ** p<0.05, * p<0.1*

Notes: Standard errors in parenthesis. This table represents the complete regression output for all severity weights in using the MOEX Severity Index for the fixed effects model to estimate the effect of Western sanctions on earnings. The weights are calculated in this table using the change in stock market prices both 10 days and 30 days after the imposition of new sanctions. The distinction of (10-day) or (30-day) under each weight distinguishes the time period after a sanction is imposed that the severity is measuring.

Table 14: Effect of U.S. and E.U. Sanctions on Earnings using RTSI Stock Market Indices

VARIABLES	Parallel Weight (10-day)	Parallel Weight (30-day)	Base Zero Weight (10-day)	Base Zero Weight (30-day)	Equation Weight (10-day)	Equation Weight (30-day)
Age in Years	0.0910***	0.0910***	0.0913***	0.0911***	0.0909***	0.0911***
	(0.00402)	(0.00402)	(0.00403)	(0.00402)	(0.00403)	(0.00402)
Age Squared	-0.000840***	-0.000839***	-0.000840***	-0.000840***	-0.000838***	-0.000839***
	(4.56E-05)	(4.56E-05)	(4.56E-05)	(4.56E-05)	(4.56E-05)	(4.56E-05)
Highest level of education attained = secondary	-0.00416	-0.00427	-0.00431	-0.00435	-0.00417	-0.0043
	(0.0103)	(0.0103)	(0.0103)	(0.0103)	(0.0103)	(0.0103)
Highest level of education attained = upper vocational	0.0536***	0.0534***	0.0533***	0.0532***	0.0533***	0.0532***
	(0.0151)	(0.0151)	(0.0151)	(0.0151)	(0.0151)	(0.0151)
Highest level of education attained = higher education	0.118***	0.118***	0.118***	0.117***	0.118***	0.118***
	(0.0201)	(0.0201)	(0.0201)	(0.0201)	(0.0201)	(0.0201)
=1 if married	-0.00481	-0.00486	-0.00491	-0.00486	-0.00487	-0.0049
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Numbers of kids =1	-0.134***	-0.134***	-0.134***	-0.134***	-0.134***	-0.134***
	(0.0158)	(0.0158)	(0.0158)	(0.0158)	(0.0158)	(0.0158)
Numbers of kids =2	-0.213***	-0.212***	-0.212***	-0.212***	-0.212***	-0.212***
	(0.0191)	(0.0191)	(0.0191)	(0.0191)	(0.0191)	(0.0191)
Number of kids =3+	-0.261***	-0.261***	-0.260***	-0.260***	-0.260***	-0.260***
	(0.0322)	(0.0321)	(0.0322)	(0.0322)	(0.0322)	(0.0322)
Urban Status = other city	0.0609	0.057	0.0581	0.0596	0.0609	0.0601
	(0.106)	(0.106)	(0.106)	(0.106)	(0.106)	(0.106)
Urban Status = township	0.0471	0.0421	0.0447	0.0471	0.0479	0.0475
	(0.144)	(0.144)	(0.144)	(0.144)	(0.143)	(0.144)
Urban Status = village	0.121	0.117	0.121	0.122	0.121	0.122
	(0.146)	(0.146)	(0.146)	(0.146)	(0.146)	(0.146)

If Year = 2011	0.0229*** (0.00499)	0.0229*** (0.00499)	0.0227*** (0.00499)	0.0229*** (0.00499)	0.0229*** (0.00499)	0.0229*** (0.0049)9
If Year = 2012	0.0727*** (0.00554)	0.0726*** (0.00554)	0.0721*** (0.00554)	0.0725*** (0.00554)	0.0726*** (0.00555)	0.0724*** (0.00554)
If Year = 2013	0.120*** (0.00536)	0.120*** (0.00536)	0.119*** (0.00537)	0.120*** (0.00536)	0.120*** (0.00536)	0.120*** (0.00536)
If Year = 2014	0.0848*** (0.00553)	0.0845*** (0.00552)	0.0841*** (0.00552)	0.0842*** (0.00552)	0.0847*** (0.00555)	0.0848*** (0.00554)
If Year = 2015	-0.00841* (0.00504)	-0.0078 (0.00505)	-0.00984* (0.00506)	-0.00832* (0.00504)	-0.00773 (0.00505)	-0.00762 (0.00505)
If Year = 2016	-0.0337*** (0.00545)	-0.0314*** (0.0055)	-0.0347*** (0.00546)	-0.0314*** (0.00551)	-0.0334*** (0.00546)	-0.0320*** (0.0055)
If Year = 2017	-0.0214*** (0.00534)	-0.0238*** (0.00549)	-0.0225*** (0.00539)	-0.0211*** (0.00533)	-0.0191*** (0.00529)	-0.0204*** (0.00532)
If Job Industry = Machine-building	0.00336 (0.0263)	0.00331 (0.0263)	0.00341 (0.0263)	0.00325 (0.0263)	0.00361 (0.0263)	0.00354 (0.0263)
If Job Industry = Military Industry	0.00557 (0.0257)	0.00687 (0.0257)	0.0101 (0.0258)	0.00929 (0.0258)	0.0143 (0.0263)	0.0156 (0.0259)
If Job Industry = Oil/gas	0.101*** (0.0251)	0.104*** (0.0251)	0.108*** (0.0252)	0.111*** (0.0253)	0.106*** (0.0259)	0.112*** (0.0256)
If Job Industry = Other heavy industry	0.0173 (0.0204)	0.0175 (0.0204)	0.0174 (0.0204)	0.0175 (0.0204)	0.0175 (0.0204)	0.0175 (0.0204)
If Job Industry = Construction	0.0590*** (0.0221)	0.0535** (0.022)	0.0618*** (0.0221)	0.0598*** (0.0221)	0.0653*** (0.0245)	0.0681*** (0.0229)
If Job Industry = Transport/ communication	-0.00445 (0.0175)	-0.00421 (0.0175)	-0.00444 (0.0175)	-0.00424 (0.0175)	-0.00415 (0.0175)	-0.00418 (0.0175)
If Job Industry = Public administration	-0.126*** (0.0264)	-0.126*** (0.0264)	-0.126*** (0.0264)	-0.126*** (0.0264)	-0.126*** (0.0264)	-0.126*** (0.0264)

If Job Industry = Education	-0.194*** (0.024)	-0.194*** (0.024)	-0.195*** (0.024)	-0.195*** (0.024)	-0.195*** (0.024)	-0.195*** (0.024)
If Job Industry = Science/ culture	-0.125*** (0.0232)	-0.124*** (0.0232)	-0.124*** (0.0232)	-0.124*** (0.0232)	-0.124*** (0.0232)	-0.124*** (0.0232)
If Job Industry = Health care	-0.115*** (0.0217)	-0.115*** (0.0217)	-0.115*** (0.0217)	-0.115*** (0.0217)	-0.115*** (0.0217)	-0.115*** (0.0217)
If Job Industry = Army/ police	0.00382 (0.0212)	0.00374 (0.0212)	0.00369 (0.0212)	0.00363 (0.0212)	0.0036 (0.0212)	0.00356 (0.0212)
If Job Industry = Trade/ domestic services	-0.0186 (0.0145)	-0.0186 (0.0145)	-0.0187 (0.0145)	-0.0187 (0.0145)	-0.0186 (0.0145)	-0.0187 (0.0145)
If Job Industry = Finance	-0.0142 (0.0297)	-0.011 (0.0298)	-0.01 (0.0297)	-0.00877 (0.0298)	-0.0108 (0.0296)	-0.0061 (0.0297)
If Job Industry = Energy	0.0446 (0.0303)	0.0425 (0.0303)	0.0484 (0.0303)	0.0484 (0.0303)	0.0622* (0.0319)	0.0613** (0.0307)
If Job Industry = Housing	-0.0883*** (0.0218)	-0.0881*** (0.0218)	-0.0883*** (0.0218)	-0.0883*** (0.0218)	-0.0882*** (0.0218)	-0.0883*** (0.0218)
If Job Industry = Other services	-0.0655*** (0.0217)	-0.0656*** (0.0217)	-0.0658*** (0.0217)	-0.0659*** (0.0217)	-0.0657*** (0.0217)	-0.0660*** (0.0217)
If Job Industry = Other industry	0.0389 (0.0294)	0.0392 (0.0294)	0.039 (0.0294)	0.039 (0.0294)	0.0389 (0.0294)	0.0389 (0.0294)
Sanction Severity	-0.0138*** (0.00323)	-0.00417*** (0.000889)	-0.0187*** (0.00429)	-0.00528*** (0.00133)	-0.00137 (0.001)	-0.00140*** (0.000498)
Constant	7.819*** (0.106)	7.819*** (0.106)	7.808*** (0.106)	7.814*** (0.106)	7.819*** (0.106)	7.814*** (0.106)
Observations	59,571	59,571	59,571	59,571	59,571	59,571
R-squared	0.061	0.061	0.061	0.061	0.06	0.061

**** p<0.01, ** p<0.05, * p<0.1*

Notes: Standard errors in parenthesis. This table represents the complete regression output for all severity weights in using the RTSI Severity Index for the fixed effects model to estimate the effect of Western sanctions on earnings. The weights are calculated in this table using the change in stock market prices both 10 days and 30 days after the imposition of new sanctions. The distinction of (10-day) or (30-day) under each weight distinguishes the time period after a sanction is imposed that the severity is measuring.